

## CLAIMS

1. A test system, comprising:  
a tester configured to test a set of components and generate test data for the set of components, wherein the components are fabricated in accordance with a fabrication process;  
and  
a diagnostic system configured to receive the test data from the tester and automatically analyze the test data to identify a characteristic of the fabrication process for the components.
2. A test system according to claim 1, wherein the test data comprises at least one of electronic wafer sort data, data derived from electronic wafer sort data, electrical test data, bin map data, and outlier data.
3. A test system according to claim 1, wherein the diagnostic system is configured to provide a corrective action suggestion based on the identified characteristic.
4. A test system according to claim 1, wherein the diagnostic system comprises a pattern recognition system configured to recognize a pattern in the test data.
5. A test system according to claim 4, wherein the pattern recognition system is configured to compare the recognized pattern to a known pattern associated with the characteristic.
6. A test system according to claim 4, wherein the pattern recognition system comprises an intelligent system configured to automatically learn an additional pattern based on the recognized pattern.
7. A test system according to claim 4, wherein the pattern recognition system comprises a classifier configured to classify the recognized pattern according to a known pattern.
8. A test system according to claim 7, wherein the classifier comprises a neural network.
9. A test system according to claim 8, wherein the neural network comprises a radial basis function network.
10. A test system according to claim 4, wherein the pattern recognition system includes a feature extractor configured to extract a feature from the test data associated with the pattern.

11. A test system according to claim 10, wherein the feature extractor calculates at least one of a mass, a centroid, a geometric moment, and a moment of Hu based on the test data.
12. A test system according to claim 10, wherein the feature extractor is configured to extract at least two features from the test data, and wherein the pattern recognition system further comprises a feature selector configured to select fewer than all of the features for analysis.
13. A test system according to claim 12, wherein the feature selector operates in conjunction with a genetic algorithm.
14. A test data analysis system for analyzing test data for a set of components fabricated and tested using a fabrication process, comprising:
  - a memory for storing the test data; and
  - a diagnostic system having access to the memory and configured to identify a characteristic of the fabrication process based on the test data.
15. A test data analysis system according to claim 14, wherein the test data comprises at least one of electronic wafer sort data, data derived from electronic wafer sort data, electrical test data, bin map data, and outlier data.
16. A test data analysis system according to claim 14, wherein the diagnostic system is configured to provide a corrective action suggestion based on the identified characteristic.
17. A test data analysis system according to claim 14, wherein the diagnostic system comprises a pattern recognition system configured to recognize a pattern in the test data.
18. A test data analysis system according to claim 17, wherein the pattern recognition system is configured to compare the recognized pattern to a known pattern associated with the characteristic.
19. A test data analysis system according to claim 17, wherein the pattern recognition system comprises an intelligent system configured to automatically learn an additional pattern based on the recognized pattern.

20. A test data analysis system according to claim 17, wherein the pattern recognition system comprises a classifier configured to classify the recognized pattern according to a known pattern.

21. A test data analysis system according to claim 20, wherein the classifier comprises a neural network.

22. A test data analysis system according to claim 21, wherein the neural network comprises a radial basis function network.

23. A test data analysis system according to claim 17, wherein the pattern recognition system includes a feature extractor configured to extract a feature from the test data associated with the pattern.

24. A test data analysis system according to claim 23, wherein the feature extractor calculates at least one of a mass, a centroid, a geometric moment, and a moment of Hu based on the test data.

25. A test data analysis system according to claim 23, wherein the feature extractor is configured to extract at least two features from the test data, and wherein the pattern recognition system further comprises a feature selector configured to select fewer than all of the features for analysis.

26. A test data analysis system according to claim 25, wherein the feature selector operates in conjunction with a genetic algorithm.

27. A computer-implemented method for testing components fabricated and tested according to a fabrication process, comprising:

obtaining test data for the components; and

automatically identifying a characteristic of the fabrication process based on the test data.

28. A computer-implemented method for testing components according to claim 27, wherein the test data comprises at least one of electronic wafer sort data, data derived from electronic wafer sort data, electrical test data, bin map data, and outlier data.
29. A computer-implemented method for testing components according to claim 27, further comprising providing a corrective action suggestion based on the identified characteristic.
30. A computer-implemented method for testing components according to claim 27, wherein automatically identifying the characteristic comprises recognizing a pattern in the test data.
31. A computer-implemented method for testing components according to claim 30, wherein automatically identifying the characteristic further comprises comparing the recognized pattern to a known pattern associated with the characteristic.
32. A computer-implemented method for testing components according to claim 30, further comprising automatically learning an additional pattern based on the recognized pattern.
33. A computer-implemented method for testing components according to claim 30, wherein automatically identifying the characteristic comprises classifying the recognized pattern according to a known pattern.
34. A computer-implemented method for testing components according to claim 33, wherein classifying the recognized pattern is performed by a neural network.
35. A computer-implemented method for testing components according to claim 34, wherein the neural network comprises a radial basis function network.
36. A computer-implemented method for testing components according to claim 27, wherein automatically identifying the characteristic comprises extracting a feature from the test data associated with the recognized pattern.
37. A computer-implemented method for testing components according to claim 36, wherein the feature comprises at least one of a mass, a centroid, a geometric moment, and a moment of Hu based on the test data.

38. A computer-implemented method for testing components according to claim 36, wherein automatically identifying the characteristic further comprises selecting the feature from multiple features for analysis.
39. A medium storing instructions executable by a machine, wherein the instructions cause the machine to execute a method for analyzing test data comprising:
- obtaining test data for the components; and
  - automatically identifying a characteristic of the fabrication process based on the test data.
40. A medium storing instructions according to claim 39, wherein the test data comprises at least one of electronic wafer sort data, data derived from electronic wafer sort data, electrical test data, bin map data, and outlier data.
41. A medium storing instructions according to claim 39, the method for analyzing further comprising providing a corrective action suggestion based on the identified characteristic.
42. A medium storing instructions according to claim 39, wherein automatically identifying the characteristic comprises recognizing a pattern in the test data.
43. A medium storing instructions according to claim 42, wherein automatically identifying the characteristic further comprises comparing the recognized pattern to a known pattern associated with the characteristic.
44. A medium storing instructions according to claim 42, the method for analyzing further comprising automatically learning an additional pattern based on the recognized pattern.
45. A medium storing instructions according to claim 42, wherein automatically identifying the characteristic comprises classifying the recognized pattern according to a known pattern.
46. A medium storing instructions according to claim 45, wherein classifying the recognized pattern is performed by a neural network.
47. A medium storing instructions according to claim 46, wherein the neural network comprises a radial basis function network.

48. A medium storing instructions according to claim 39, wherein automatically identifying the characteristic comprises extracting a feature from the test data associated with the recognized pattern.

49. A medium storing instructions according to claim 48, wherein the feature comprises at least one of a mass, a centroid, a geometric moment, and a moment of Hu based on the test data.

50. A medium storing instructions according to claim 48, wherein automatically identifying the characteristic further comprises selecting the feature from multiple features for analysis.